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Author

The primary author of this proposed rule is Richard G. Biggins, U.S. Fish and Wildlife Service, Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259–0321 or FTS 672–0321).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411; Pub. L. 100–478, 102 Stat. 2306; Pub. L. 100–653, 102 Stat. 3825 (16 U.S.C. 1531 *et seq.*); Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under CLAMS, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS:							
*	*	*	*	*	*	*	
Pearly mussel, purple cat's paw.	*Epioblasma* (=*Dysnomia*) *obliquata obliquata* (=*E. sulcata sulcata*).	U.S.A. (AL, IL, IN, KY, TN)	NA	E		NA	NA
*	*	*	*	*	*	*	

Dated: June 12, 1989.

Susan Recce Lamson,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 89–17597 Filed 7–26–89; 8:45 am]

BILLING CODE 4310–55–M

50 CFR Part 17

RIN 1018–AB31

Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for the Arkansas Fatmucket, Lampsilis powelli

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine the Arkansas fatmucket, *Lapsilis powelli*, to be a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). This freshwater mussel is known to exist in the headwaters of the Saline River, and in the Caddo, Ouachita, and South Fork Ouachita Rivers of central Arkansas. Major threats to its continued existence are impoundments, channel alteration, gravel dredging, sedimentation and water quality degradation. This proposal, if made final, would implement the protection of the Act for the Arkansas fatmucket. The Service seeks relevant data and comments from the public.

DATES: Comments from all interested parties must be received by September 25, 1989. Public hearing requests must be received by September 11, 1989.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Jackson Field Office, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: James Stewart at the above address (601/965–4900 or FTS 490–4900).

SUPPLEMENTARY INFORMATION:

Background

The Arkansas fatmucket was described as *Unio powelli* by Lea in 1852 from the Saline River, Arkansas (Johnson 1980). It was synonymized under *Actinonaias ligamentina* by Call in 1895 (Harris and Gordon 1988). In 1900, Simpson placed it in the genus *Lampsilis* (Simpson 1914). The species has been overlooked by a number of authors in reviews of Arkansas mussel fauna, including Burch (1975), Gordon, et al. (1980) and Gordon (1980). Johnson (1980) in his monograph, Stansbery (1983), and Gordon and Harris (1985) all consider *L. powelli* as a valid species. Reported collections of *L. powelli* from the Spring and Neosho Rivers, Kansas, and the Black River, Missouri, are misidentifications.

The shell of the Arkansas fatmucket is generally of medium size, but it occasionally exceeds 100 mm in length. It is ellipticial to long obovate with subinflated valves. The umbos are moderately full and project slightly above the hinge line. The shell surface is generally smooth with a shiny olive brown to tawny periostracum and lacks rays. The nacre is bluish white and iridescent. There is sexual dimorphism (Johnson 1980).

The Arkansas fatmucket prefers deep pools and backwater areas that possess sand, sand-gravel, sand-cobble or sand-rock with sufficient flow to periodically

remove organic detritus, leaves and other debris. It is not generally found in riffles nor does it occur in impoundments. It is frequently found with islands of *Justicia americana* (water willow) where substrate is typically depositional and water depth is about 1 meter (Harris and Gordon 1988).

The Arkansas fatmucket is known to exist in the Ouachita, Saline and Caddo River systems. In the Ouachita Basin, this species occurs in the Ouachita River upstream of Lake Ouachita in Montgomery and Polk Counties, and in the South Fork Ouachita River upstream of Lake Ouachita in Montgomery County. In the Saline River Basin, the species occurs in Alum Fork, the Middle Fork, and the North Fork above their confluence with the Saline River, and in the Saline River from its formation downstream to about the Fall Line. The species does not occur in the South Fork of the Saline or in Hurricane Creek, a major tributary, but it probably did historically. In the Caddo River, the Arkansas fatmucket is known from three locations, all of which are in the mainstem.

Collection records on which to base historical distribution of this species do not exist. However, some assumptions can be made by examining the current distribution, current habitat types, and alterations to habitat that have occurred for various reasons. The probable historic range of this species likely included the Caddo River from Norman downstream to the Ouachita River, including at least the lower reach of the South Fork Caddo River. It seems likely that the species occupied the Ouachita River from Malvern upstream to the species' current known range, and the South Fork Ouachita River for its entire length. In the Saline River drainage, the Arkansas fatmucket likely occurred in all four forks and the mainstem from the Fall Line upstream to the extent of permanent flowing water, and in Hurricane Creek upstream of the Fall Line. Archeological records of other Ozarkian mussels indicate these species may have historically occurred throughout the entire drainage of those systems rather than being restricted to the headwaters as they are at present.

Land use in the basins where this species occurs is predominantly silviculture with lesser amounts of crop lands, grass land and urban development. Most of the forest land is owned by timber companies, although a small portion of the species' range lies within the Ouachita National Forest. The remainder of the land is privately owned in relatively small tracts (Harris and Gordon 1988).

The only previous Service action on this species was its inclusion in a notice of review on January 6, 1989 (54 FR 579), where it is listed as a category 2 species, i.e., a species whose listing as endangered or threatened may be appropriate, but for which more data are needed for a final determination.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Arkansas fatmucket *(Lampsilis powelli)* are as follows:

A. *The present or threatened destruction, modification or curtailment of its habitat or range.* The range of this species has been curtailed and continues to be threatened by impoundments, channel alteration, gravel dredging, sedimentation and water quality degradation. On the Ouachita River, the range of this species has been reduced by the construction of Lake Ouachita, Lake Hamilton and Lake Catherine and the hypolimnetic water releases from these impoundments. On the Caddo River, the impoundment of DeGray Reservoir and resulting hypolimnetic water releases have impacted what was probably the uppermost historic habitat for the species in this system. A part of the Ouachita River Basin Comprehensive Study by the U.S. Army Corps of Engineers includes a feasibility study for one or more impoundments for flood control and other purposes on the Saline River near Benton (Harris and Gordon 1988). The Soil Conservation Service has constructed one impoundment on a tributary of the South Fork Ouachita River, has another under construction, and plans a third impoundment on the mainstem South Fork Ouachita River (Harrris and Gordon 1988). While these Soil Conservation Service impoundments will not directly inundate known populations of this species, there are impacts occurring during the construction and possibly during the operation of these impoundments. During construction there is increased threat from silt and sediment, and after completion, the control of water flows during low flow periods could expose the mussel and also result in lowered dissolved oxygen. Harris and Gordon (1988) list 16 existing impoundments, 1 under construction, and 1 planned within the known range of this mussel that undoubtedly have already impacted its existence or will in the future.

In the South Fork Ouachita River, there is evidence of adverse impacts to a population of the Arkansas fatmucket from channel alteration as a result of highway repairs occurring in 1984–85. The existing channel is filling with organic debris, and flows are apparently inadequate to flush the area. Channel modification is common at highway crossings, and habitat for this species undoubtedly has been impacted by the many road crossings within its range.

Small gravel operations are common within the range of this species, and many streams are impacted by the removal of preferred substrate and by the resulting downstream sedimentation. The Saline River downstream of Benton is severely impacted by gravel dredging (Harris and Gordon 1988).

A large majority of the watershed in rivers where this mussel occurs is in timber production, with the next most common land use being agricultural production—primarily livestock and broiler chickens. Silviculture practices in the area have contributed to significant sedimentation problems. In the Alum Fork and Middle Fork Saline Rivers, where the best population and habitat occurs, an estimated 214,300 tons of sediment are transported annually (Harris and Gordon 1988). The majority of this erosion is sheet and rill, with road- and stream-bank erosion accounting for most of the remainder.

Water quality degradation apparently is responsible for the absence of the Arkansas fatmucket from a significant area within the species' probable historic range. The South Fork Caddo River receives runoff from a barite mining operation. Prairie Creek, a tributary of the Ouachita River, receives improperly treated municipal waste (Harris and Gordon 1988). Hurricane Creek and Lost Creek of the Saline River drainage receive acid mine runoff from bauxite mines. Additionally, non-point source pollution occurs from feedlot runoff, timber harvest, road construction, and fertilization for agriculture in all three river basins where this species is found.

Existing habitat in the Ouachita and Caddo Rivers is marginal at best. In a 1987–1988 survey of the mainstem Ouachita River, involving some 54 river miles of potential habitat, only 5 individuals of the Arkansas fatmucket were collected (Harris and Gordon 1988). In the Caddo River, the stream

gradient upstream of DeGray Reservoir is such that habitat is marginal and the two known populations of this species may be in jeopardy. The only known population in the Caddo River below DeGray Reservoir may be impacted by hypolimnetic water releases.

The probable historic range of this species has been reduced by over 40 percent (138 river miles), and the optimum habitat and good populations currently occur in only about 20 percent (62 river miles) of the total estimated area of historic habitat. These calculations are based upon the historic range as described in the Background section. If habitat loss were based upon the range that is indicated by archeological records, the percentage would be much greater.

B. *Over-utilization for commercial, recreational, scientific or educational purposes.* This species has not been collected for scientific purposes and does not seem to be in jeopardy from over-collecting. However, this could pose a threat to the limited populations occurring in the Ouachita, Caddo, Saline or the North Fork Saline Rivers, should someone decide to collect in these areas.

C. *Disease or Predation.* There are no known diseases or predators for this species. Muskrats have not been observed to use the species for food.

D. *The inadequacy of existing regulatory mechanisms.* The State of Arkansas requires a scientific collector's permit prior to taking any species of mollusc. However, this is an almost unenforceable regulation because of limited law enforcement personnel and more urgent priorities. Other environmental regulations will not give priority to this species unless it is listed.

E. *Other natural or manmade factors affecting its continued existence.* The life history requirements for this species, including the fish host, are unknown, making it impossible to evaluate potential impacts in this regard. The remaining populations of the Arkansas fatmucket are somewhat isolated from each other, which can lead to a loss of genetic diversity and difficulty with reproduction, especially in those streams where the population is very low. The good population in the South Fork Ouachita River (9 percent of existing habitat) is isolated from all other populations by Lake Ouachita, as is the very sparse population in the mainstem Ouachita River. The Caddo River populations are isolated from each other by DeGray Reservoir and from the Saline River populations by some 200 river miles. The Saline River drainage populations are isolated from the other populations, but they are not isolated from each other by any obvious natural barriers. However, if the fish host is not migratory, the exchange of genetic material between these populations would be a very uncommon event.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list the Arkansas fatmucket as threatened rather than endangered. Threatened status was chosen because the species still occurs in good numbers in the headwater streams of two river systems. This distribution makes it unlikely that all populations would be effected by a simultaneous action. Critical habitat is not designated for reasons discussed in that section.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species that is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species at this time owing to lack of benefit from such designation. No additional benefits would accrue from a critical habitat designation that do not already accrue from the listing. Precise locality data are available to appropriate agencies through the Service office described in the ADDRESSES section. All involved parties and landowners will be notified of the location and importance of protecting this species' habitat.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Protection needs of the Arkansas fatmucket should be considered during the following potential involvement by Federal agencies: The Environmental Protection Agency—pesticide registration and waste management actions; Corps of Engineers—project planning and operation, and during the permit review process; Soil Conservation Service—construction and operation of impoundments; Federal Highway Administration—bridge and road construction at points where known habitat is crossed; and possibly the Farmers Home Administration—various loan programs that may be associated with further urban development within the species' range.

The Act and implementing regulations found at 50 CFR 17.21 and 17.31 set forth a series of general prohibitions and exceptions that apply to all threatened wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect; or to attempt any of these), import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving threatened wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23 and 17.32. Such permits are

available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. For threatened species, there are also permits for zoological exhibition, educational purposes, or special purposes consistent with the purposes of the Act. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be suffered if such relief were not available. However, since the Arkansas fatmucket is not known to be involved in any commercial activity, no requests for relief under such a permit are expected.

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of this proposal are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) The location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range and distribution of this species; and

(4) Current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulation on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests must be made in writing and addressed to Field Supervisor (see **ADDRESSES** section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Burch, J.B. 1975. Freshwater unionacean clams (Mollusca:Pelecypoda) of North America. Malacological Publications, Hamburg, MI. 204 pp.

Gordon, M.E., and J.L. Harris. 1985. Distribution of *Lampsilis powelli* (Lea) (Bivalvia:Unionacea). The Nautilus 99(4):142–144.

Gordon, M.E. 1980. Recent mollusca of Arkansas with annotations to systematics and zoogeography. Proc. Arkansas Acad. Sci. 34:58–62.

Gordon, M.E., L.R. Kraemer, and A.V. Brown. 1980. Unionacea of Arkansas: historical rivers, checklist, and observations on distributional patterns. Bull. Amer. Malacol. Union. 1979:31–37.

Harris, J.L., and M.E. Gordon. 1988. Status survey of *Lampsilis powelli* (Lea 1852). A report to the U.S. Fish and Wildlife Service. 43 pp. + field notes.

Johnson, R.I. 1980. Zoogeography of the North American Unionacea (Mollusca: Bivalvia) north of the maximum Pleistocene glaciation. Bull. Mus. Comp. Zool. 149:77–189.

Simpson, C.T. 1914. A descriptive catalogue of the naiades, or pearly freshwater mussels. Bryant Walker, Detroit, Pp. 75–76.

Stansbery, D.H. 1983. Some sources of nomenclatural and systematic problems in unionid mussels. Pp. 46–62 *In* A.C. Miller, compiler. Report of freshwater mussels workshop, 26–27 October 1982. U.S. Army Engineer Waterways Experiment Station, Environmental Laboratory, Vicksburg, MS.

Author

The primary author of this proposed rule is James Stewart (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411; Pub. L. 100–478, 102 Stat. 2306; Pub. L. 100–653, 102 Stat. 3825 (16 U.S.C. 1531 *et seq.*); Pub. L. 99–625, 100 Stat. 3500, ulness otherwise noted.

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under "Clams," to the List of Endangered and Threatened Wildlife.

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS							
Fatmucket, Arkansas	*Lampsilis powelli*	U.S.A. (AR)	NA	T		NA	NA

Dated: June 7, 1989.

Susan Recce Lamson,

Acting Assistant Secretary for Fish, Wildlife and Parks.

[FR Doc. 89-17594 Filed 7-26-89; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB31

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Ottoschulzia rhodoxylon (Palo de Rosa)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine *Ottoschulzia rhodoxylon* (palo de rosa) to be an endangered species pursuant to the Endangered Species Act (Act) of 1973, as amended. *Ottoschulzia rhodoxylon* is a plant that is endemic to Puerto Rico and Hispaniola. In Puerto Rico it is found in the limestone hills of the north coast, on limestone-derived soils of the south coast, and on the serpentine soils of the western mountains. Only nine individuals are known to exist in these three areas. The species is threatened by deforestation due to the expansion of residential and industrial areas and its extremely low population size. This proposal, if made final, would extend the Federal protection and recovery provisions afforded by the Act to *Ottoschulzia rhodoxylon*. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by September 25, 1989. Public hearing requests must be received by September 11, 1989.

ADDRESSES: Comments and materials, and requests for public hearing concerning this proposal should be sent to the Field Supervisor, Caribbean Field Office, U.S. Fish and Wildlife Service, P.O. Box 491, Boquerón, Puerto Rico 00622. Comments and materials received will be available for public inspection, by appointment, at this office during normal business hours, and at the Service's Southeast Regional Office, Suite 1282, 75 Spring Street, SW., Atlanta, Georgia 30303.

FOR FURTHER INFORMATION CONTACT: Ms. Susan Silander at the Caribbean Field Office address (809/851-7297) or Mr. Tom Turnipseed at the Atlanta Regional Office address (404/331-3583 or FTS 242-3583).

SUPPLEMENTARY INFORMATION:

Background

Ottoschulzia rhodoxylon (palo de rosa) was first collected by Leopold Krug near Mayaguez, Puerto Rico, in 1876 and was described in 1908. This West Indian genus of only 3 species was dedicated to Otto Eugen Schulz, a German botanist (Liogier and Martorell 1982). Today the species is known from one locality in the limestone hill area on the north coast near Bayamón and in several sites in the Guánica Commonwealth Forest, a dry limestone forest on the south coast. One individual has recently been reported from the Maricao Commonwealth Forest (G. Proctor, Puerto Rico Department of Natural Resources, personal communication). Urban, residential, and industrial expansion has greatly reduced forested area in all three of these localities. The information available indicates that the species is also rare in the Dominican Republic (Little *et al.* 1974, G. Proctor, personal communication).

Ottoschulzia rhodoxylon is a small evergreen tree that has been reported to reach 12 to 15 feet (4 to 5 meters) in height. The leaves are alternate, glabrous, and elliptic to ovate. They are from 2 to 3½ inches (5 to 9 centimeters) long and 1¼ to 2½ inches (3 to 6 centimeters) wide, rounded or blunt at the apex and the base, entire, thick, and leathery. Flowers have not been observed, but fruits have recently been described as a one-seeded drupe with a thin pericarp (G. Proctor personal communication). Flowers in this genus are bisexual, solitary or in clusters at the leaf bases, and composed of a tubular corolla with 5 lobes (Little *et al.* 1974). As indicated by both the common name and specific name, the heartwood is reddish and suitable for articles of turnery.

On the north coast *Ottoschulzia rhodoxylon* is found in semi-evergreen, seasonal forests at an elevation of approximately 325 feet (100 meters) in the limestone hills of Bayamón, to the west of the San Juan metropolitan area. On the south coast it occurs in low elevation, semi-deciduous, dry forest on limestone. One individual is found along a dry stream bed, which carries water only during periodic torrential rains. All known south coast individuals occur within the Guánica Commonwealth Forest. In Maricao it is found on serpentine soils in lower montane, semi-evergreen forest at an elevation of approximately 1,960 feet (600 meters). These serpentine outcrops and serpentinaceous soils contribute to a high floristic diversity and endemism.

Deforestation for agriculture, grazing, charcoal production, and urban and industrial development has had a significant effect on the native flora of Puerto Rico. Much of the remaining forest consists of secondary growth. Individual trees of *Ottoschulzia rhodoxylon* are known to have been lost to forest clearing. The extreme rarity of the species and the apparent irregularity of flower and fruit production make the species extremely vulnerable to the loss of any one individual.

Ottoschulzia rhodoxylon was recommended for Federal listing by the Smithsonian Institution (Ayensu and DeFilipps 1978). The species was included among the plants being considered as endangered or threatened species by the Service, as published in the **Federal Register** (45 FR 82480) dated December 15, 1980; the November 28, 1983, update (48 FR 53680) of the 1980 notice; and the September 27, 1985, revised notice (50 FR 39526). The species was designated category 1 (species for which the Service has substantial information supporting the appropriateness of proposing to list them as endangered or threatened) in each of the three notices.

In a notice published in the **Federal Register** on February 15, 1983 (48 FR 6752), the Service reported the earlier acceptance of the new taxa in the